FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
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3012 16th Avenue West
Seattle, WA 98119-2029
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Spetember 7, 2012

Gerald Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included is the amended report from the testing of material submitted on August 16, 2012 from the X-Ray Self Monitor M09384, F&BI 208231 project. A case narrative has been added to the report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ACU0830R.DOC

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e-mail: fbi@isomedia.com

August 30, 2012

Gerald Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Included are the additional results from the testing of material submitted on August 16, 2012 from the X-Ray Self Monitor M09384, F&BI 208231 project. There are 7 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 16, 2012 by Friedman & Bruya, Inc. from the Alaskan Copper Works X-Ray Self Monitor M09384, F&BI 208231 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Alaskan Copper Works
208231-01	M09384

The sample was preserved with nitric acid prior to the pH analysis. The results should not be considered valid.

Date of Report: 08/30/12
Date Received: 08/16/12
Project: X-Ray Self Monitor M09384, F&BI 208231
Date Extracted: NA
Date Analyzed: 08/28/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH USING EPA METHOD 9040C

Sample ID Laboratory ID	pH
M09384 208231-01	1.96 ht

* Due to the low pH of this sample, the result provided by this test method may be an estimate.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M09384	Client:	Alaskan Copper Works
Date Received:	08/16/12	Project:	X-Ray Self Monitor M09384
Date Extracted:	08/16/12	Lab ID:	208231-01 100x
Date Analyzed:	08/23/12	Data File:	208231-01 100x.020
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	87	60	125
Indium	81	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	243
Silver	233

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	X-Ray Self Monitor M09384
Date Extracted:	08/16/12	Lab ID:	I2-539 mb
Date Analyzed:	08/23/12	Data File:	I2-539 mb.019
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	btb

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	94	60	125
Indium	91	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Silver	<1

Date of Report: 08/30/12
Date Received: 08/16/12
Project: X-Ray Self Monitor M09384, F&BI 208231

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH BY METHOD 9040C

Laboratory Code: 208231-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	1.96	1.97	1	0-20

Date of Report: 08/30/12
Date Received: 08/16/12
Project: X-Ray Self Monitor M09384, F&BI 208231

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 208209-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	ug/L (ppb)	20	2.02	99	101	71-130	2
Silver	ug/L (ppb)	5	<1	99	102	73-114	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/L (ppb)	20	99	80-119
Silver	ug/L (ppb)	5	106	85-116

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

208231

SAMPLE CHAIN OF CUSTODY

ML 08-16-12 AI 4

[redacted]

Send Report To: Genzo Thompson
Company: ACW
Address: 608 S. Hanford St. St
City, State, ZIP: Seattle WA 98134
Phone #: 206-571-6037 Fax #: 206-382-4379

SAMPLER (signature):

PROJECT NAME/NO.: X-ray self monitor

PO #: M09384

REMARKS:

TURNAROUND TIME
☐ Standard (2 Weeks)
☒ RUSH 5 day
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8260B	VOCs by 8260B	SVOCs by 8270C	PCBs	HEM	pH	Cr+Ag			Notes
M09384	01	8/16/12	1:30	H2O	1								*	*			*-per CT
																	MR 8/23/12

Retained & Origin, Inc.
[redacted]

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
	Genzo Thompson	ACW	8/16/12	2:30PM
	HONG NGUYEN	FBI	2	V

Samples received at 29 °C